Community Assistantship Program

Indigenous Corn Propagation Project

Prepared in partnership with
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Subj: Final Report Indigenous Corn Propagation Project
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Thank you for allowing me and my laboratory to be part of this very interesting project. Indigenous foods are not just a source of nourishment, but an important part of a people's culture. Playing a small role in the continuation of traditional varieties of corn for the Native American tribes of our region is extremely gratifying.

In April of 2006 Sally Auger entrusted to us 9 varieties of indigenous corn seed.

Table 1: Seed variety, number of seeds provided and percent germination of each lot.

Variety	Number of Seed	Percent germination
Chip Amber	34	44%
Mandan Red Clay	8	50%
Mandan Blue	18	22%
Bear Island	55	50%
Cherokee Flour	19	10%
Lenape Blue	4	50%
Quapaw Red	10	40%
Red Lake Hominy	61	5%
Cree Corn	62	2%

In the May of 2006 Karin Kettering photographed the supplied seed and imbibed a portion of each variety along with a control organic sweet corn from Seed Savers Inc. Imbibed seeds were planted in 5 gallon pots containing Sunshine Professional Growing Mix. Pots were placed in an isolated greenhouse section in the Plant Growth Facilities at the University of Minnesota. Plants were grown at 30 C day, 25 C night temperatures with supplementary light provided by HID lights for 16 hours per 24 hour period. Germination was variable, but we were able to establish at least 2 plants for each variety (Table 1).

At the end of May 2006 Karin left to take a full time job in Washington DC.

On June 8 I imbibed and planted most of the remaining seed in flats and allowed them to germinate under mist. When plants were 7 days old they were planted at one of two field sites. Site one was the Student Organic Farm on the St Paul Campus. Site two was May Farm CSA at the Wilder Forest in May Township. These sites were selected because they both follow organic practices.

Greenhouse Grown Plants: Between July 17 and August 20 plants were hand pollinated. Individual cobs were trimmed and bagged; pollen was collected from several plants, combined, and used to pollinate silks that had emerged overnight. Plants were watered and fertilized with dilute a high calcium fertilizer daily. Plants were taken to

maturity and cobs harvested when plants turned brown and cobs drooped. Cobs were taken into the lab, allowed to dry till seed was easily removed from the cob. At this writing only Red Lake Hominy needs to dry longer before seed removal is optimal.

Field Grown Plants: Transplanting the young seedlings into the field was very successful. 95% of the transplanted plants survived. Unfortunately, about 5 weeks after transplanting 8 days of very high temperatures significantly affected plant growth. The major problem was that the plants produced pollen before the silks were ready. It was therefore not possible to pollinate silks with pollen from the same variety. Only one small cob of Mandan Red was produced from the field experiment. Plants were planted later than was optimal. I do not anticipate a similar problem if seeds planted earlier next year.

Yields:

On September 28 cobs were photographed; seeds were removed from the cobs by hand and placed in paper bags. A sample of 10 seeds was randomly selected and weighed. The total seed yield was then weighed and an approximate harvested seed number was calculated by dividing the total weight by the weight for ten seed and then multiplying by 10. The percent seed increase was then calculated by dividing the approximate number of seed by the number of seeds supplied and multiplying by 100 (Table 2).

Table 2: Peta Wakan Tipi Indigenous Corn Seed Increase

Variety	Seeds Supplied	Harvested dry Weight Grams	Weight per 10 seed grams	Approximate Harvested Seed	Percent Seed Increase
Chip Amber	34	503.8	2.15	2343	6892
Mandan Red Clay	8	92.15	2.2	429	5358
Mandan Blue	18	43.2	2.8	201	1116
Bear Island	55	237.3	2.1	1104	2007
Cherokee Flour	19	118.2	4.5	550	2894
Lenape Blue Flour	4	139.5	3	649	16221
Quapaw Red	10	97.4	2.6	453	4530
Red Lake Hominy	61	150	4.3	698	1144
Cree Corn	62			10	16

Significant seed increase was achieved for all varieties except the Cree Corn. Although the Cree Corn was reported to have been grown in 2002, we had only 2% germination. This germination rate yielded only 2 plants in the greenhouse and the one harvested cob had only 10 seeds. Despite our best efforts the Mandan Blue had one ear that was contaminated with another pollen (see picture below). The blue seed was separated from

the yellow, only the true blue seed is provided. Overall, the seed from all varieties looks good and I anticipate it should grow well next year.

Seed should be stored in a cool (4 to 8 degrees C) dry place over the winter and planted according to best practices in the Spring/Summer of 2007.

Low resolution photographs are provided in this report. High resolution electronic images are provided on a CD as well as 4 by 6 inch prints.

Thank you again for trusting us with this valuable resource. We are honored.

Photographs of Corn 2006:

Cree corn

Chip Amber

Red Lake Hominy

Quapaw Red

Lenape Blue

Cherokee Flour

Bear Island

Mandan Blue

Mandan Red Clay